

# South Lahontan Hydrologic Region

## Setting

The South Lahontan hydrologic region is a land of impressive physical variety including mountains, alpine lakes, deserts and playas. The region includes both the highest and the lowest points within the lower-48 states. While the region is larger in area than any other region, it contains only 2 percent of the states population. The South Lahontan region is a relatively dry one. Some of the central and eastern portions of the Mojave Desert average only 4 inches annually. Death Valley receives a little less than 2 inches on the average, but just a few tenths of an inch falls in some years. The mountains, especially the Sierra Nevada, can get large amounts of snow.

Although much of the land is under some kind of protected or managed status for scenic, environmental, and military reasons, the region has significant agricultural acreage and several growing cities. Alfalfa, pasture, and truck and vegetable crops occupy the main irrigated areas. Wide fluctuations in service levels above base population are typical of the recreational and resort communities in the area. The Town of Mammoth Lakes serves surface and groundwater to a permanent population of only about 5,000, an average daily population of about 13,000, and a peak weekend and holiday period population up to 30,000 per day. Most environmental water demands involve the restoration of the water surface elevation of Mono Lake and releases into the Owens River that were intercepted for use in Los Angeles after 1913. The other important river in the region is the Mojave River. Although seldom seen flowing on the earth’s surface, its’ primarily underground flow supports nearly all the groundwater-supplied agriculture and urban population in the Mojave River Valley.

Groundwater provides nearly half of the annual water supply in the region. Groundwater is used conjunctively with surface water in the more heavily pumped basins. The East Branch of the SWP California Aqueduct brings imported water into the region. Some of the SWP water is used to recharge groundwater in the Mojave River Valley.

The following water balance table provides a summary of detailed regional water accounting contained in Volume 2. As shown in the table, exports from the region far exceed the consumptive uses within the region.  
 \*\*\* make other observations when the table is ready\*\*\*

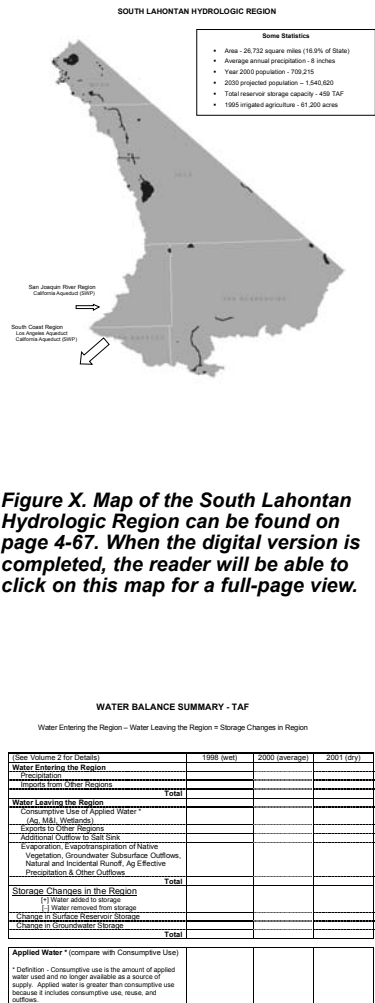


Figure X. Water Balance Summary of the South Lahontan Hydrologic Region can be found on page 4-66. When the digital version is completed, the reader will be able to click on this for a full-page view.

## State of the region

Many parts of the region commonly experience shortfalls in water supplies. For example, a study by the Antelope Valley Water Group concluded that the valley's existing and future water supply reliability from groundwater, the SWP, Littlerock Reservoir, and recycling is low and that full 1998 water demands would be met only half the time without overdrafting groundwater resources. Meeting water demands for projected growth and development is a concern for many water agencies. Overdrafting groundwater resources can also dry up watering holes needed by wildlife.

Surface water quality is excellent in the region, greatly influenced by snowmelt from the eastern Sierra Nevadas. Nonetheless, at lower elevations, water quality can be degraded, both naturally (from geothermal activity) and anthropogenically (e.g. recreation, grazing). Nutrients entering Crowley Reservoir have contributed to low dissolved oxygen levels in reservoir releases, resulting in fish kills downstream. Water quality and quantity are inherently related in the Owens River watershed due to the large exports of surface and groundwater to the City of Los Angeles. Arsenic is a concern in the basin, and therefore, Los Angeles, especially with the impending lower drinking water standard. While the vast majority of public water supply wells meet drinking water standards, when these standards are exceeded, it is most often for TDS, fluoride, or boron. Several domestic water supply wells in the Barstow area have been closed due to historical contamination from industrial and domestic wastewater. Three military installations in the southwestern part of the region are on the Federal Superfund National Priorities list because of volatile organic compounds and other hazardous contaminants.

The region has already developed solutions to two major issues within the last 10 years. Over use of the Mojave River Valley groundwater and dewatering of the Owens River/Mono Basin by the Los Angeles Aqueduct both negatively affected the region for decades. Overdraft of the Mojave River groundwater basin since the early 1950's lead to adjudication in 1996 and appointment of Mojave Water Agency as the basin watermaster. The Los Angeles Department of Water and Power (LADWP) is presently involved with many restoration projects for the Owens River and Mono Basin. In 1993, LADWP began final flow releases to restore Mono Lake to a water surface elevation of 6,392 feet. By 2003, Mono Lake elevation had reached 6,382, a level where LADWP can export 16 taf/yr. The Department is participating in a plan to enhance wetlands around Mono Lake. LADWP has developed plans to help ranchers manage grazing practices in the Crowley Lake tributary area. The Owens Gorge Rewatering Project is one

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of LADWP's premier restoration programs to restore the river after 50 years of dewatering. Several other restoration projects are underway.

## Looking to the future

Many water districts have taken a proactive approach to the water reliability problems and have commenced studies and projects that could provide partial or complete solutions. These include water conservation programs, water recycling, and groundwater recovery, as well as water marketing and other water supply augmentation responses. MWA has entered into a multi-year banking and exchange agreement with Solano County Water Agency. During any wet year, SCWA can bank up to 10 taf of its annual SWP water in MWA's groundwater basin, not to exceed a total balance of 20 taf. During Drought years, SCWA can take part of MWA's SWP water in exchange. MWA has developed ability to store additional imported supplies in the Mojave River Basin at MWA's Rock Springs groundwater recharge facility and is considering additional recharge facilities in other areas. Several other districts are considering groundwater recharge projects. Loan and grant programs, especially for drought relief, will continue to be needed in the region. Also, monitoring and cleanup of chromium in groundwater, including at the PG&E generating station in Hinkley, and cleanup of sites contaminated by mining wastes continue to be needed in the Region.

### WATER BALANCE SUMMARY - TAF

Water Entering the Region – Water Leaving the Region = Storage Changes in Region

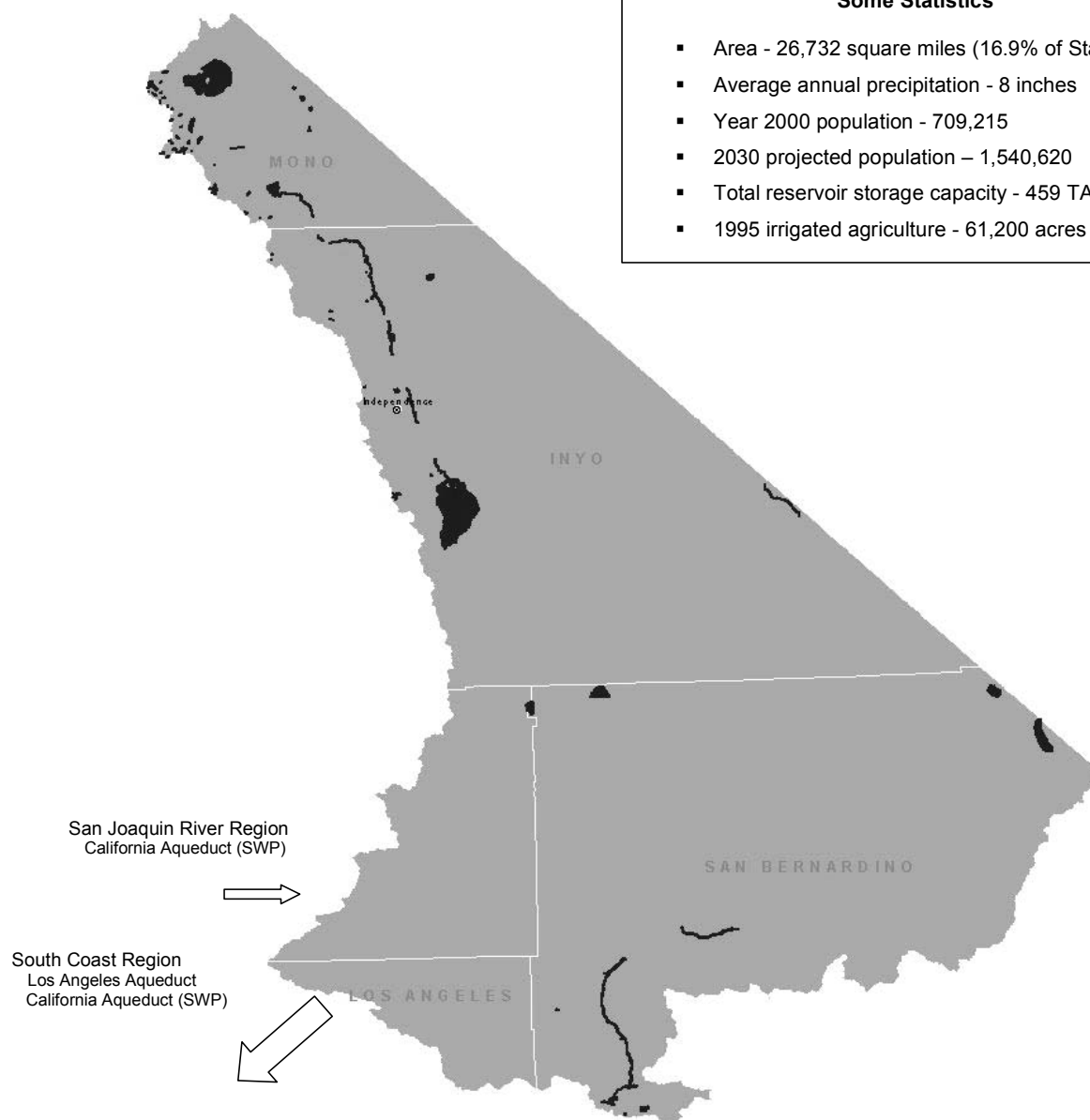
(See Volume 2 for Details)	1998 (wet)	2000 (average)	2001 (dry)
<b>Water Entering the Region</b>			
Precipitation			
Imports from Other Regions			
<b>Total</b>			
<b>Water Leaving the Region</b>			
Consumptive Use of Applied Water * (Ag, M&I, Wetlands)			
Exports to Other Regions			
Additional Outflow to Salt Sink			
Evaporation, Evapotranspiration of Native Vegetation, Groundwater Subsurface Outflows, Natural and Incidental Runoff, Ag Effective Precipitation & Other Outflows			
<b>Total</b>			
<b>Storage Changes in the Region</b>			
[+] Water added to storage			
[-] Water removed from storage			
Change in Surface Reservoir Storage			
Change in Groundwater Storage			
<b>Total</b>			
<b>Applied Water *</b> (compare with Consumptive Use)			
* Definition - Consumptive use is the amount of applied water used and no longer available as a source of supply. Applied water is greater than consumptive use because it includes consumptive use, reuse, and outflows.			

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**SOUTH LAHONTAN HYDROLOGIC REGION**

**Some Statistics**

- Area - 26,732 square miles (16.9% of State)
- Average annual precipitation - 8 inches
- Year 2000 population - 709,215
- 2030 projected population – 1,540,620
- Total reservoir storage capacity - 459 TAF
- 1995 irrigated agriculture - 61,200 acres



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